

## Create a Compass

### Instructions for Teachers

Two types of compasses are included in this activity. The box compass is more complicated and requires more materials than the water compass. A water compass can easily be made during a class period.

#### Create a Box Compass

##### *Materials:*

- Square box with sides no more than 2" high (bottom of a half-gallon milk carton will do)
- Cardboard circle small enough to lay flat in bottom of box
- 1 ½" nail with head
- 1 large paper clip, straightened
- Compass Rose
- Magnet (one from the front of the refrigerator will do)
- Glue or tape

##### *Directions:*

1. Pierce the center of the box bottom with the 1 ½" nail from the bottom up into the box.
2. Take the straightened paper clip and compare to the diameter of your compass rose. If longer, trim it.
3. Rub the paper clip against a magnet for several minutes.
4. Glue or tape wire to the cardboard circle, slightly off-center.
5. On same side, mark center of cardboard circle and pierce halfway through. Place cardboard circle on point of nail in box. Let circle settle. It will turn gently until one end of the needle points to north.
6. Create a compass rose either by printing one or drawing your own. It should be the size of your cardboard circle.
7. Glue the compass rose to the cardboard circle with the fleur de lis placed where the needle end points to north.

##### *Learner Objectives:*

- Create a compass from ordinary objects
- Describe the scientific principles of the compass

##### *Procedure:*

Assign individual or group to research and create a box compass. Research may include historical information on the uses of the compass as well as the scientific theories of the compass. Oral presentations and judging of projects could be included in this activity. This instrument and the others in the Activities could be assigned to individuals or groups to create a "Navigation Day" where all the instruments are displayed.

#### Create a Water Compass

##### *Materials:*

- Small paper clip, straightened
- Small piece of styrofoam (packing peanut works great)
- Bowl of water
- Magnet (one from the front of the refrigerator will do)
- Permanent marker

##### *Directions:*

1. Rub the paper clip with the magnet for several minutes.
2. Pierce the paper clip through the styrofoam.
3. Gently place on the surface of water. Allow the needle enough time to align along the magnetic fields of the earth. It will then point north. Test this by gently blowing on the needle to push it out of alignment. The same end of the needle should always return to the same direction. Mark the north end of the needle with permanent marker.

##### *Procedure:*

This is a good classroom activity. Have students rub their paper clip with the magnet while you discuss the properties of a compass. Each child pushes his or her paper clip into the styrofoam. Gently place the pierced Styrofoam in the bowl of water. The needle will rotate until one end points north. Mark this end of the wire with a permanent marker.